

Protein Synthesis: Transcription and Translation

To better understand the process of protein synthesis, you will perform the work done by your enzymes to transcribe DNA into mRNA and then identify the final polypeptide chain of amino acids.

Instructions:

1. Write down the corresponding mRNA sequence based on the given DNA sequence, in groups of three (codons). Remember that mRNA has Uracil (U) instead of Thymine (T).
2. Using the table, find the amino acid that matches the codon on the mRNA. A polypeptide chain usually starts with Methionine (Met) and ends with a Stop codon.
3. Write the first letter of each amino acid and find the secret message!

Example:

DNA:	TAC - AGG - TCC - CCG - GGT - AGT - CTG - AGA - TTC - ATC
mRNA:	AUG - UCC - AGG - GGC - CCA - UCA - GAC - UCU - AAG - UAG
Amino Acids:	Met - Ser - Arg - Gly - Pro - Ser - Asp - Ser - Lys - Stop

Sequence:

DNA:	TAC - CGT - CCC - TAA - ACG - GAT - TCT - TAC - AAG - ACA - TTA - TGA - TCA - ATT
mRNA:	
Amino Acids:	
Message:	____ _

		Second Letter					
		U	C	A	G		
1st letter	U	UUU Phe UUC UUA Leu UUG	UCU UCC Ser UCA UCG	UAU Tyr UAC UAA Stop UAG Stop	UGU Cys UGC UGA Stop UGG Trp	U C A G	3rd letter
	C	CUU CUC Leu CUA CUG	CCU CCC Pro CCA CCG	CAU His CAC CAA Gln CAG	CGU CGC Arg CGA CGG	U C A G	
	A	AUU AUC Ile AUA AUG Met	ACU ACC Thr ACA ACG	AAU Asn AAC AAA Lys AAG	AGU Ser AGC AGA Arg AGG	U C A G	
	G	GUU GUC Val GUA GUG	GCU GCC Ala GCA GCG	GAU Asp GAC GAA Glu GAG	GGU GGC Gly GGA GGG	U C A G	

Answer key:

DNA:	TAC - CGT - CCC - TAA - ACG - GAT - TCT - TAC - AAG - ACA - TTA - TGA - TCA - ATT
mRNA:	AUG - GCA - GGG - AUU - UGC - CUA - AGA - AUG - UUC - UGU - AAU - ACU - AGU - UAA
Amino Acids:	Met - Ala - Gly - Ile - Cys - Leu - Arg - Met - Phe - Cys - Asn - Thr - Ser - Stop
Message:	M A G I C L A M P C A T S